

Voluntary U.S. grade standards are issued under the authority of the Agricultural Marketing Act of 1946, which provides for the development of official U.S. grades to designate different levels of quality. These grade standards are available for use by producers, suppliers, buyers, and consumers. As in the case of other standards for grades of processed fruits and vegetables, these standards are designed to facilitate orderly marketing by providing a convenient basis for buying and selling, for establishing quality control programs, and for determining loan values.

The standards also serve as a basis for the inspection and grading of commodities by the Federal inspection service, the only activity authorized to approve the designation of U.S. grades as referenced in the standards, as provided under the Agricultural Marketing Act of 1946. This service, available as on-line (in-plant) or lot inspection and grading of all processed fruit and vegetable products, is offered to interested parties, upon application, on a fee-for-service basis. The verification of some specific recommendations, requirements, or tolerances contained in the standards can be accomplished only by the use of on-line inspection procedures. In all instances, a grade can be assigned based on final product factors or characteristics.

In addition to the U.S. grade standards, grading manuals or instructions for inspection of several processed fruits and vegetables are available upon request for a nominal fee. These manuals or instructions contain detailed interpretations of the grade standards and provide step-by-step procedures for grading the product.

Grade standards are issued by the Department after careful consideration of all data and views submitted, and the Department welcomes suggestions which might aid in improving the standards in future revisions. Comments may be submitted to, and copies of standards and grading manuals obtained from:

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UNITED STATES STANDARDS FOR GRADES OF
FROZEN OKRA
EFFECTIVE XXXX, XXXX

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Authority: Agricultural Marketing Act of 1946, Secs. 203, 205, 60 Stat. 1087, as amended, 1090, as amended (7 U.S.C. 1622, 1624).

Note: Compliance with the provisions of these standards shall not excuse failure to comply with the provisions of the Federal Food, Drug, and Cosmetic Act, or with applicable State laws and regulations.

§ 52.1512 Product Description

Frozen okra is the product prepared from the clean, sound, succulent, and edible fresh pods of the okra plant (*Hibiscus esculentus*) of the green variety. The product may or may not be trimmed, is properly prepared, properly processed, and then frozen and stored at temperatures necessary for preservation.

§ 52.1512 Styles

- (a) Whole okra** consists of whole pods of any length which may possess an edible portion of the cap. The length of a whole pod is determined by measuring from the outermost point of the tip end of the pod to the outermost point of the stem end of the pod.
- (b) Cut okra** is a whole pod, which may possess an edible portion of the cap, and which may have been cut transversely into pieces of approximate uniform length. The length of a unit of cut okra is determined by measuring the longitudinal axis of the unit.

§ 52.1513 Kinds of Pack

The kind of pack of frozen okra is not incorporated into the grades of finished product, since it is not a quality factor. The two types of pack for frozen okra are described as regular process and extended blanch process.

- (a) Regular process** means that the frozen okra is processed in such a manner that the brightness is not affected by the process.

- (b) **Extended blanch process** means that the frozen okra is intentionally processed in such a manner that the brightness is affected by the process.

§ 52.1514 **Definitions of Terms**

- (a) **Acceptable Quality Level (AQL)** means the maximum percentage of defective units or the maximum number of defects per hundred units of product that, for the purpose of acceptance sampling, can be considered satisfactory as a process average.
- (b) **Appearance**
- (1) **Good appearance** (for regular process) means that the units are bright and reasonably free of insignificant blemishes.
- (2) **Reasonably good appearance** means that the units may be slightly dull and are fairly free of insignificant blemishes.
- (c) **Blemished unit** means any unit which is so affected by discoloration or abnormalities that it materially affects the appearance of the unit. This includes trimmed or cut surfaces and pathological or insect injury.
- (1) **Insignificantly blemished** unit means slight abnormalities, scars, discolorations, or other imperfections on the unit which may affect the appearance slightly but do not affect the edibility of the unit.
- (2) **Seriously blemished** means any unit which is so affected by discoloration or abnormalities, including trimmed or cut

surfaces, as to seriously affect the appearance or edibility of the unit.

- (3) **Total blemished** means the sum of blemished and seriously blemished units.

(d) **Character**

- (1) **Good character** means the units are fleshy and tender and that the seeds are in the early stages of maturity.
- (2) **Reasonably good character** means the units may have lost their fleshy texture to a considerable extent, the units are reasonably tender, and the seeds may have developed beyond the early stages of maturity.

(e) **Color Defect**

- (1) **Minor color defect** means that the unit possesses a slightly dull color or slight yellowish green to brownish green cast or varies materially from the overall uniform color.
- (2) **Noticeable yellow or brown color** means the unit possesses a noticeable yellow or brown color but does not qualify as being "off color."

- (f) **Defect** means any nonconformance of a unit of product from a specified requirement of a single quality characteristic.

- (g) **Extraneous Vegetable Material (EVM)**, formerly harmless extraneous vegetable material (HEVM)] consists of leaves and similar harmless plant material.

(h) Flavor and odor:

(1) Good flavor and odor means the product, before and after cooking, has a characteristic good distinctive flavor and odor, characteristic of young, tender okra, is free of sand, grit, and silt, and is free from any kind of objectionable flavor or objectionable odor.

(2) Normal flavor and odor means the product, both before and after cooking, has a flavor and odor, which is characteristic of properly prepared and processed okra and is free from any kind of objectionable flavor or objectionable odor.

(i) Tough fiber means any cooked unit that contains tough fibrous development to the extent that the eating quality of the unit is materially affected.

(j) Inedible cap means any cooked unit with attached portions of cap that are inedible.

(k) Mechanical damage means pods or portions thereof that have been broken, mashed, split, shattered, or excessively trimmed, such that it noticeably affects the appearance or eating quality of the unit.

(l) Misshapen units are whole pods which are seriously deformed.

(m) Pathological or insect injury refers to any unit that possesses obvious pathological or insect damage.

(n) Sample unit size means the amount of product specified to be used for grading. For appearance, flavor, odor, and varietal characteristics, a sample unit is the entire contents of the container. For grading all

other factors, a sample unit is each 50 pods for whole style and each 100 units for cut style. It may be:

- (1) The entire contents of a container;
- (2) A portion of the contents of a container; or
- (3) A combination of the contents of two or more containers.

(o) **Small piece.**

(1) **Small piece in whole style** means a piece of pod that is one-fourth or less the weight of the smallest whole pod in the sample unit.

(2) **Small piece in cut style** means any piece of pod one-fourth inch or less in length, or units that may be broken, mashed, split, shattered, or improperly or incompletely cut so as to noticeably affect the appearance or edibility of the unit.

(p) **Stems** mean inedible stems attached to the pod.

(q) **Tolerance** means the percentage of defective units allowed for each quality factor for a specified sample size.

(r) **Tough fiber/ Inedible cap: Tough fiber** means any cooked unit that contains tough fibrous development including inedible caps, to the extent that the eating quality of the unit is materially affected.

Inedible cap means any cooked unit with attached portions of cap that are inedible.

(s) **Unit** means a okra pod or any individual portion thereof.

§ 52.1515 Grades.

- (a) **U.S. Grade A** is the quality of frozen okra that:
- (1) Meets the following prerequisites in which the okra:
 - (i) Have similar varietal characteristics;
 - (ii) Have a good flavor and odor; and
 - (iii) Have a good overall appearance (regular process only).
 - (2) It must also meet the limits for defects as specified in **§ 52.1517**, as applicable for the style.
- (b) **U.S. Grade B** is the quality of frozen okra that:
- (1) Meets the following prerequisites in which the okra:
 - (i) Have similar varietal characteristics;
 - (ii) Have a good flavor and odor; and
 - (iii) Have a reasonably good appearance.
 - (2) Is within the limits for defects as specified in **§ 52.1517**, as applicable for the style.
- (c) **Substandard** is the quality of frozen okra that fails the requirements of U.S. Grade B.

§ 52.1516 Factors of Quality

The grade of frozen okra is based on requirements for the following quality factors:

- (a) Prerequisite quality factors.
- (1) Varietal characteristics;
 - (2) Flavor and odor; and
 - (3) Appearance.

(b) Classified Quality Factors

- (1)** Extraneous vegetable material (EVM);
- (2)** Blemished;
- (3)** Seriously blemished;
- (4)** Noticeable yellow or brown units;
- (5)** Total color defects (Minor & yellow or brown);
- (6)** Inedible cap;
- (7)** Mechanical damage (whole style);
- (8)** Misshapen (whole style);
- (9)** Pathological or insect injury;
- (10)** Small pieces;
- (11)** Stems, inedible;
- (12)** "B" Character;
- (13)** "Sstd" Character; and
- (14)** Tough fiber.

§ 52.1517 Allowances for Defects

Table I
Prerequisite Factors for Frozen Okra¹ /

Factors	Grade A	Grade B
Varietal Characteristics	Similar	Similar
Flavor and Odor	Good	Normal
Appearance	Good	Reasonably Good

¹/ Determined container-by-container.

Table II
Frozen Okra, Whole Style
Acceptance Numbers for Specified Defects
Grade A

FACTORS	TOL.	AQL <u>1/</u>	1 x 50 <u>2/</u>	3 x 50	6 x 50	13 x 50	21 x 50	29 x 50
			50	150	300	650	1050	1450
Extraneous Vegetable Material	4.0	2.9	3	8	13	26	39	53
Seriously blemished	2.0	1.3	2	4	7	13	20	26
Total blemished	6.0	4.6	5	11	20	39	60	80
Noticeable yellow or brown	1.0	0.612	1	2	4	7	10	14
Total color defects	10.0	8.2	7	18	33	65	101	137
Mechanical damage (includes broken, split, mashed & excessively trimmed pods)	10.0	8.2	7	18	33	65	101	137
Small pieces and misshapen	5.0	3.8	4	9	17	33	50	67
Stems, inedible	4.0	2.9	3	8	13	26	39	53
"B" Character	10.0	8.2	7	18	33	65	101	137
Tough fiber (including inedible caps)	4.0	2.9	3	8	13	26	39	53

1/ AQL calculated from tolerance (TOL) at 650 units.

2/ Unofficial samples

Table III
Frozen Okra, Whole Style
Acceptance Numbers for Specified Defects
Grade B

FACTORS	TOL.	AQL <u>1/</u>	1 x 50 <u>2/</u>	3 x 50	6 x 50	13 x 50	21 x 50	29 x 50
			50	150	300	650	1050	1450
Extraneous Vegetable Material	6.0	4.6	5	11	20	39	60	80
Seriously blemished	4.0	2.9	3	8	13	26	39	53
Total blemished	12.0	10.1	8	21	39	78	122	173
Noticeable yellow or brown	6.0	4.6	5	11	20	39	60	80
Total color defects	20.0	17.6	13	34	63	130	205	279
Mechanical damage (includes broken, split, mashed & excessively trimmed pods)	20.0	17.6	13	34	63	130	205	279
Small pieces and misshapen	10.0	8.2	7	18	33	65	101	137
Stems, inedible	6.0	4.6	5	11	20	39	60	80
"Sstd" Character	10.0	8.2	7	18	33	65	101	137
Tough fiber (including inedible caps)	8.0	6.4	6	15	26	52	80	108

1/ AQL calculated from tolerance (TOL) at 650 units.

2/ Unofficial samples

Table IV
Frozen Okra, Cut Style
Acceptance Numbers for Specified Defects

Grade A (100 Plan)	TOL.	AQL <u>1/</u>	1 x 100	3 x 100	6 x 100	13 x 100	21 x 100	29 x 100
			100	300	600	1300	2100	2900
Extraneous Vegetable Material	1.0	0.651	2	4	7	13	20	26
Seriously blemished	2.0	1.47	3	8	14	26	40	53
Total blemished	6.0	5.0	8	21	39	78	122	165
Noticeable yellow or brown	1.0	0.651	2	4	7	13	20	26
Total color defects	10.0	8.7	13	34	64	130	205	278
Small pieces (includes poorly trimmed pieces, mechanical damage and damaged pieces)	12.0	10.6	16	41	77	157	247	336
Stems, inedible	4.0	3.2	6	15	26	52	80	108
"B" Character	10.0	8.7	13	34	64	130	205	278
"Sstd" Character	0	--	--	--	--	--	--	--
Tough fiber (including inedible caps)		3.2	6	15	26	52	80	108

1/ AQL calculated from tolerance (TOL) at 1300 units.

2/ Unofficial samples

Table V
Frozen Okra, Cut Style
Acceptance Numbers for Specified Defects
Grade B (100 Plan)

FACTORS	TOL.	AQL <u>1/</u>	1 x 100	3 x 100	6 x 100	13 x 100	21 x 100	29 x 100
			100	300	600	1300	2100	2900
Extraneous Vegetable Material	2.0	1.47	3	8	14	26	40	53
Seriously blemished	4.0	3.2	6	15	26	52	80	108
Total blemished	12.0	10.6	16	41	77	157	247	336
Noticeable yellow or brown	6.0	5.0	8	21	39	78	122	165
Total color defects	20.0	18.3	25	67	127	263	417	569
Small pieces (includes poorly trimmed pieces, mechanical damage and damaged pieces)	20.0	18.3	25	67	127	263	417	569
Stems, inedible	4.0	3.2	6	15	26	52	80	108
Stems, inedible	6.0	5.0	8	21	39	78	122	165
"B" Character	N/A	--	--	--	--	--	--	--
"Sstd" Character	10.0	8.7	13	34	64	130	205	278
Tough fiber (including inedible caps)	8.0	6.8	11	28	51	104	162	220

1/ AQL calculated from tolerance (TOL) at 1300 units.

2/ Unofficial samples

§ 52.1518 Sample Size

The sample size used to determine whether the requirements of these standards are met shall be as specified in the sampling plans and procedures in the "Regulations Governing Inspection and Certification of Processed Fruits and Vegetables, Processed Products Thereof, and Certain Other Processed Food Products" (7 CFR 52.1 through 52.83).

§ 52.1519 Quality Requirements Criteria

- (a)** Lot inspection. A lot of frozen okra is considered as meeting the requirements for quality if:

 - (1)** The prerequisite requirements specified in **§ 52.1516** and **§ 52.1517**, Table I are met; and
 - (2)** None of the allowances for the individual quality factors specified in Tables II, III, IV, and V of **§ 52.1517**, as applicable for the style, are exceeded.
- (b)** Single sample unit. Each unofficial sample unit submitted for quality evaluation will be treated individually and is considered as meeting the requirements for quality if:

 - (1)** The prerequisites requirements specified in **§ 52.1516** and **§ 52.1517**, Table I are met; and
 - (2)** The Acceptable Quality Levels in Tables II, III, IV, and V of **§ 52.1517**, as applicable for the style, are not exceeded.